



DEPARTMENT OF VETERINARY PATHOLOGY

Richard K. Harris, Col, USAF, BSC
Chairperson
Date of Appointment - 24 December 1992

MISSION

The Department of Veterinary Pathology provides diagnostic and consultation services and conducts educational programs and research in veterinary, comparative, and toxicologic pathology. Maintains the Institute's laboratory animal facility, providing comprehensive support to investigators using laboratory animals. Maintains the Registries of Veterinary Pathology, Comparative Pathology, and Toxicologic Pathology for Animals, is a member of the Institute's Environmental Center, and serves as the WHO Collaborating Center for Worldwide Reference on Comparative Oncology.

ORGANIZATION

The department is composed of the Division of Veterinary Pathology, the Division of Laboratory Animal Medicine, the Registry of Comparative Pathology, and the Office of the Chairperson.

Division of Veterinary Pathology - Chief, Thomas P. Lipscomb, LTC, VC, USA
Division of Laboratory Animal Medicine - Chief, Albert H. McCullen, LTC, VC, USA
Registry of Comparative Pathology - Chief Pathologist, Timothy P. O'Neill, D.V.M., Ph.D.

STAFF (OFFICE OF THE CHAIRPERSON)

Medical

Richard K. Harris, Col, USAF, BSC, Chairperson
William Inskeep II, COL, VC, USA, Assistant Chairperson

Scientific

Henry J. Jenkins, Electron Microscopist

Administrative

- (A) Paul E. Ryan, MSG, USA, NCOIC
- Martha A. Bers, Secretary
- David Harris, Administrative Assistant (ARP)
- (A) Susan N. J. Pang, Administrator, RTPA (ARP)

Col Harris is a member of the Advisory Council, Center for Advanced Pathology, the president of the American Registry of Pathology's Registrar's Forum, a member of the AFIP Animal Care and Use Committee, a military consultant to the Surgeon General of the United States Air Force, a member of the Society of Toxicologic Pathologists' Nomenclature and Diagnostic Criteria Steering Committee, a member of the Advisory Panel of the Center for Environmental Pathology and Toxicology, a member of the Editorial Board of *Veterinary Pathology*, a member of the American College of Veterinary Pathologists' Examination Committee, and a member of the American Veterinary Medical Association's Veterinary Steering Committee for the National Museum of Health and Medicine.

COL Inskeep is a member of the Joint Technical Working Group, formed under the Armed Services Biomedical Research Evaluation and Management Committee, tasked with writing the

report to Congress on the use of animals in DOD programs and with revising DOD animal use regulations. He is a member of the board of directors for the District of Columbia Veterinary Medical Association.

MSG Ryan is the senior enlisted advisor for Army personnel assigned to AFIP, and the senior oversight NCO for Army animal care specialists assigned to Air Force and Navy biomedical research institutes.

SUMMARY OF ACTIVITIES/HIGHLIGHTS

Consultations: The department received 2,130 cases for consultation and/or submission to its registries for educational purposes. Nearly half of the cases reported represent complete autopsies in which wet tissue was received. Twenty-nine of the cases received a quality diagnosis code of “4,” representing a major disagreement with the contributor’s diagnosis. Department staff and residents conducted 356 autopsies on animals from the Institute’s Division of Laboratory Animal Medicine and the National Zoological Park.

Research: Staff, residents, and fellows collaborated on 20 research protocols. The Division of Laboratory Animal Medicine supported 34 research protocols. The department received \$70,000 in extramural funds for research-related activities; this figure is expected to triple in 1996.

Education: Seven courses, symposia, and workshops were given, with over 500 participants. The Division of Laboratory Animal Medicine developed and conducted a new course titled “Current Laboratory Animal Science Seminars.” This course, attended by 54 professionals, will be held annually in conjunction with the Pathology of Laboratory Animal Course. One hundred thirty-five institutions representing over 1,000 pathologists from 16 countries participated in the department’s microslide mailout continuing education program, now in its 43rd year. The department played a major role in advocating veterinary involvement in the strategic planning of the National Museum of Health and Medicine (NMHM). In July 1995, the executive board of the American Veterinary Medical Association authorized formation of a Veterinary Steering Committee to the NMHM. This committee meets monthly at the AFIP and is in the intermediate stages of developing a permanent prototype exhibit titled “Emerging and Remerging Diseases.” The department developed and implemented Home Pages on the World Wide Web for the Department and for the U. S. Army Veterinary Corps.

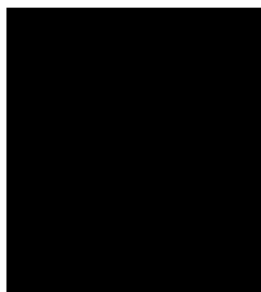
Publications: The staff published 22 scientific papers, book chapters, and abstracts and gave 30 presentations.

Registries: The Registries of Veterinary Pathology, Comparative Pathology, and Toxicologic Pathology for Animals are thriving, as summarized in the reports for the Division of Veterinary Pathology and the Registry of Comparative Pathology. A booth entitled “The Veterinary Registries at the AFIP,” featuring each of the three registries, was displayed at the annual meetings of the Society of Toxicologic Pathologists, the American College of Veterinary Pathologists, and the American Veterinary Medical Association.

GOALS

1. Build financial base of the department’s three registries
2. Revise *the WHO Histologic Classification of Tumors of Domestic Animals*
3. Play an expanding role in the Institute’s environmental programs
4. Develop comparative pathology-oriented immunopathology laboratory
5. Upgrade histopathology study sets available for loan
6. Utilize new information technologies to expand education programs
7. Rewrite DoD manual describing procedures for necropsy of military-owned animals
8. Improve efficiency of consultation service; continue to improve service to military veterinarians
9. Maintain the American Association for Accreditation of Laboratory Animal Care (AAALAC)

- accreditation for the laboratory animal facility
10. Develop a program for utilizing military working dogs as environmental sentinels
 11. Develop prototype exhibit “Emerging and Remerging Diseases” for the National Museum of Health and Medicine
 12. Conduct a comprehensive evaluation of the current coding and database systems used by the department; restructure if necessary
 13. Develop the Registry of Toxicologic Pathology’s archival and retrieval programs
 14. Revise and consolidate comparative and veterinary pathology educational program directories.



DIVISION OF VETERINARY PATHOLOGY

Thomas P. Lipscomb, LTC, VC, USA
Chief
Date of Appointment - 1 November 1992

MISSION

To provide consultation, education, and research in veterinary pathology. Responsible for the DoD’s only residency program in veterinary pathology and an educational program that serves as an international center for training. Operates a diagnostic service responsible for DoD-owned animals worldwide, provides a widely utilized consultation service for military and civilian pathologists, and supports AFIP research. Works with military, other federal, and civilian agencies in conducting collaborative medical research projects.

STAFF

Medical

- Thomas P. Lipscomb, LTC, VC, USA, Chief, Division of Veterinary Pathology
- (A) LuAnn McKinney, LTC, VC, USA, Chief, Research Branch
 - Bruce H. Williams, MAJ, VC, USA, Chief, Training Branch
 - Mark J. Martinez, MAJ, VC, USA, Chief, Diagnostic Services Branch
 - F. Yvonne Schulman, D.V.M., Staff Pathologist (ARP)

Residents

- (D) William D. Fall, MAJ, VC, USA
- (D) Marlyn D. Goodbary, MAJ, VC, USA
- (D) Fonzie J. Quance-Fitch, MAJ, VC, USA
- Duane A. Belote, MAJ, VC, USA (3rd year)
- Crystal M. Briscoe, MAJ, VC, USA (3rd year)
- James T. Cobb, MAJ, VC, USA (3rd year)
- Gary Coleman, MAJ, VC, USA (2nd year)
- Lois Colgin, MAJ, VC, USA (2nd year)
- Dana P. Scott, CPT, VC, USA (2nd year)
- (A) K. Lance Batey, CPT, VC, USA (1st year)
- (A) Steven M. Duniho, CPT, VC, USA (1st year)



- (A) Steven R. Mog, CPT, VC, USA (1st year)
- (A) Jo Lynne Wilber, CPT, VC, USA (1st year)

Fellow

James M. Eastep, D.V.M., M.S.

Administrative

Daleta Y. Johnson, Secretary

CONSULTATION

Cases

Description	Received	*Reported
Military	699	684
Federal (non-DoD)	259	126
Civilian	1,172	856
Surgical	973	913
Autopsy	1,157	753

*The difference in the number of cases reported and the number received reflects the cases submitted to the department for educational, archival, and research purposes rather than for consultation.

Autopsies Conducted*

Division of Laboratory Animal Medicine, AFIP	115
National Zoological Park (NZP)	241

*Histopathology performed on almost all cases; NZP numbers not included with AFIP consultation cases.

The number of cases submitted to the Registry of Veterinary Pathology and the Registry of Comparative Pathology is considered adequate. The residency program requires a variety of types of case material from a wide spectrum of vertebrate species, including infectious, toxic, neoplastic, and metabolic diseases. To this end, we obtain training material from civilian diagnostic services as well as from military sources. Many of our consultation requests come from military and civilian physician pathologists who have received animal tissues for histologic evaluation. Diagnostic support for the military working animal programs is given the highest priority. Detailed histopathological studies with extensive review, frequent utilization of electron microscopy and immunohistochemistry, and consultations with other departments within the Institute insure the highest quality of consultation work. Residents serve as prosectors for the Division of Laboratory Animal Medicine of the AFIP and the National Zoological Park.

RESEARCH

The division conducted independent research and provided pathology support for a number of intramural (AFIP) and extramural research projects. The projects and their current status are as follows:



<i>Research Project/POC</i>	<i>Collaborator (funding)</i>	<i>Status</i>
Effects of Persian Gulf War Service on Military Working Dogs/Martinez, Inskeep, Harris	DOD MWD Veterinary Services	Ongoing
Protozoal Diseases/ Lipscomb	USDA	Ongoing five manuscripts published, one accepted, one in preparation)
Development of Maxillo-Surgical Techniques in Monkeys/McKinney	WRAMC	Ongoing (journal facial article in preparation)
Effects of Extra-Shock Wave on Physes of Rabbits/McKinney	WRAMC	Ongoing (journal corporeal article in preparation)
Hepatotoxicosis in hepadenovirus-infected Woodchucks and Humans/McKinney	FDA	Ongoing
Human Artificial Heart Valve Development and Testing/Jenkins	FDA	Ongoing (EM support)
Alaskan Oil Spill Sea Otter Studies/ Lipscomb/Harris	U.S. Fish & Wildlife Service (Dept. of the Interior) and EPA	Completed (one book chapter and two journal articles published, three abstracts)
East Coast Dolphin 1987-88/ Schulman/Lipscomb	National Marine Fisheries Service (Dept. of Commerce)	Ongoing (two Epizootic of journal articles published, one journal article in preparation, one book chapter in review, one abstract)
Fatal Diarrheal Disease of Ferrets/Williams	ARP/AFIP	Ongoing
Canine Cutaneous Spindle Cell Sarcomas/ Lipscomb/Fall	AFIP	Ongoing
CNS Tumors of Domestic Animals/Schulman	ARP/Ohio State University	Study set in preparation

Causes of Marine Mammal Mortality Lipscomb/Schulman	National Marine Fisheries Service (Dept. of Commerce)	Ongoing (three journal articles published and one book chapter in review)
Applications of CD-ROM Technology to Training Pathology Eastep/Williams	ARP	Ongoing, one CD-ROM and one in Veterinary abstract
Histomorphology of Metazoan Parasites in Tissue Section/Gardiner (dept. parasitology consultant)	ARP	Book in Preparation
Cause of Fibropapillomas in Green Sea Turtles/ Lipscomb	National Marine Fisheries Service (Dept of Commerce)	Ongoing
Postvaccinal distemper in dogs/Lipscomb	Johns Hopkins	Ongoing
Histopathologic Study of Walrus Liver and Kidney; Correlation with Metal Levels/Lipscomb	USF&WS	Report in preparation

EDUCATION

The division operates the only residency program in veterinary pathology in the Department of Defense. It is a 3-year training program, and at present there are 10 residents at various stages of training. In addition, trainees from Army research laboratories, as well as certain other government and civilian veterinarians, attend our formal training sessions throughout the academic year. Most of the participants are preparing for the American College of Veterinary Pathologists' certifying examination, given in September of each year. We consider our program to be one of the most effective and efficient in the country. Over the past 8 years, 25 AFIP residents have taken the ACVP examination and 19 have obtained board certification, 16 after just 3 years of training. The average pass rate for this examination is less than 40%, and most of the candidates have trained for more than 4 years. The program is based upon formal training sessions given throughout the academic year and three annual courses. One facet of our formal program, systemic pathology training, is organized on a rotation basis so that all major organ systems are covered over a 3-year cycle. Another important part of formal training, the Wednesday Slide Conference program, is composed of weekly conferences held throughout the academic year (30 in all). Approximately 1,000 veterinary pathologists from 135 institutions in 16 countries participate in the Wednesday Slide Conference. The systemic pathology and Wednesday conferences are attended by an average of 30 professionals (20 to 25 in training) and constitute a minimum of 4 hours each week from mid-

September to mid-May. The 1995 Pathology of Laboratory Animals (POLA) course was held 7-10 August and was attended by 126 professionals, who each received 24.5 credit hours of continuing education. The C.L. Davis Foundation course, "The Gross Morbid Anatomy of Diseases of Animals," was cosponsored by this department and the Uniformed Services University of the Health

Sciences (USUHS). It was held 19-23 March and was attended by 108 veterinarians. Thirty-six CME credit hours were awarded each attendee. The fourth annual Descriptive Veterinary Pathology course was given 6-9 June. Forty-one veterinarians attended the course, and 23 CME credit hours were awarded each attendee. Members of the division presented 21 lectures at courses or to groups during the year. Forty-seven veterinarians visited the department and spent from one day to several weeks studying. Eight veterinary students completed 3- to 4-week externships here during the year. Over 100 study sets are available by interlibrary loan; 120 sets were loaned during 1995. The department continued work on two CD-ROM projects, one utilizing material from the Wednesday Slide Conference and the second focusing on gross pathology. The Wednesday Slide Conference CD-ROM, cataloging 120 cases from the 1993-1994 conference year, went on sale in December 1995. MAJ Williams developed World Wide Web Home Pages for the department and for the U. S. Army Veterinary Corps. The department's Home Page includes images and text from a variety of our educational programs, serves as a conduit to other veterinary/comparative pathology-related Web sites, and is a platform for advertising future continuing education courses and symposia.

REGISTRY OF TOXICOLOGIC PATHOLOGY FOR ANIMALS

The Registry of Toxicologic Pathology for Animals (RTPA) underwent fundamental organizational changes. Ms. Susan Pang was hired as the administrator of the registry. LTC LuAnn McKinney was designated the director and staff scientist of the registry. The registry became proactively involved in the sales and publication of the Society of Toxicologic Pathologists-sponsored monograph series, *Guides to the Standardized System of Nomenclature and Diagnostic Criteria for Toxicologic Pathology*. Five guides were published in 1995. Subscriptions to the series doubled this calendar year. The RTPA sponsored an industry-funded symposium at the annual meeting of the American College of Veterinary Pathology: "Mini-symposium on the Toxicologic Pathology and Safety Assessment of Biopharmaceuticals." It was established that future symposia would target specific categories of drugs and that the registry would solicit applicable related materials.

With the International Life Sciences Institute, the registry helped establish the North American Control Animal Database. In combination with the Registries of Veterinary Pathology and Comparative Pathology, the RTPA exhibited a booth at the annual meetings of the STP, the ACVP, and the AVMA. Donations by pharmaceutical companies were increased by 20%.

OTHER ACTIVITIES

LTC Lipscomb is a member of the National Marine Fisheries Service's Working Group on Unusual Marine Mammal Mortalities, a congressionally mandated group that advises the Federal Government on appropriate actions following significantly increased, unusual, or unexplained mortality of marine mammals in order to determine the cause and mitigate the effects. In recent years, the AFIP has provided extensive pathology support to federal marine mammal programs. This involvement led to the discovery that morbilliviruses caused the 1987-1988 Atlantic coast and the 1993-1994 Gulf of Mexico dolphin epizootics. Collaboration with the AFIP's Department of Cellular Pathology resulted in development of a sensitive polymerase chain reaction test for dolphin morbillivirus. Recent studies have provided evidence supporting the theory that a herpesvirus may be the cause of the worldwide epizootic of fibropapillomas in green sea turtles. He is coauthoring the World Health Organization's domestic animal mammary tumor fascicle.

LTC McKinney is a member of the AFIP Research Committee and the Society of Toxicologic Pathologists' Nomenclature and Diagnostic Criteria Steering Committee and serves as the director of the Registry of Toxicologic Pathology for Animals.

MAJ Williams is a member of the AFIP's Information Guidance Council and Scientific Computing Committee and a member of the National Advisory Board of the C.L. Davis D.V.M. Foundation. He established a Home Page on the World Wide Web for disseminating veterinary pathology educa-

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tional information. He is a member of the U.S. Army Veterinary Information Program Steering Committee.

MAJ Martinez developed and implemented a program utilizing military working dogs that served in Desert Storm as sentinels for environmental exposures that may have played a role in the Gulf War-related illness. He is in the process of extensively updating and revising the Army regulation that governs necropsy procedures for military working dogs.

Dr. Schulman is collaborating with Dr. Adalbert Koestner of The Ohio State University and members of AFIP's Department of Neuropathology in producing an extensive study set of brain tumors of domestic animals. She is also coordinating production of the second series of the World Health Organization *International Histological Classification of Tumors of Domestic Animals*. She will coauthor the fascicle on tumors of the nervous system.

GOALS

Our goals in 1996 are to maintain our success rate for the ACVP board certification examination; continue the trend of decreasing case turnaround time; expand the use of electronic information transmission to provide rapid diagnostic reporting to contributors throughout the world; establish a registry of marine mammal pathology; develop applications of CD-ROM technology for pathology education; continue the trend of increasing publications; continue production of the WHO Domestic Animal Tumor Fascicles; and continue updating of the military working dog necropsy regulation and procedures.

PRESENTATIONS

Jan. 10, 1995: Orlando, Florida, North American Veterinary Conference, "Diseases of Ferrets, Rabbits, and Laboratory Rodents," B. H. Williams, D.V.M.

Feb. 1, 1995: Falls Church, Virginia, Council of Army Veterinarians, "Military Working Dog as a Sentinel of Disease in Persian Gulf," W. Inskeep, D.V.M.

Feb. 11, 1995: Baltimore, Maryland, Maryland Medical Lab/Metpath Symposium on Exotic Animal Medicine, "Diseases of Ferrets," B. H. Williams, D.V.M.

Feb. 14, 1995: Landstuhl, Germany, Pathology for Clinical Veterinarians Course, "Cytology--A Very Useful Clinicopathological Aid," W. Inskeep, D.V.M.

Feb. 16, 1995: Landstuhl, Germany, Pathology for Clinical Veterinarians Course, "Cytology--A Very Useful Clinicopathological Aid," W. Inskeep, D.V.M.

Apr. 4, 1995: San Antonio, Texas, AMEDD Officer Basic Course, Veterinary Corps, "Postmortem Examination of the Military Working Dog," M. J. Martinez, D.V.M.

May 8, 1995: Mystic, Connecticut, 26th Annual Meeting of the International Association for Aquatic Animal Medicine, "Morbilliviral Diseases of Aquatic Mammals, an Overview and Update," T. P. Lipscomb, D.V.M.

May 10, 1995: Baltimore, Maryland, Mid-Atlantic States Veterinary Symposium, "Diseases of Ferrets," B. H. Williams, D.V.M.

May 26, 1995: Gainesville, Florida, University of Florida College of Veterinary Medicine, "CD-ROM Based Learning: Is It All We Want It To Be?" J. C. Eastep, D.V.M., M.S.

Aug. 9, 1995: Bethesda, Maryland, Pathology of Laboratory Animals Course, "Pathology of the Ferret," B. H. Williams, D.V.M.

Aug. 29, 1995: Silver Spring, Maryland, National Marine Fisheries Service Conference of Stranding Network Coordinators, "Role of the AFIP in Marine Mammal Pathology," T. P.

Lipscomb, D.V.M.

Sept. 12, 1995: Washington, D.C., 1995 short course on Military Veterinary Medicine, "Military Working Dog Necropsy Techniques and Submission of Samples" and "The Residency Program at the Armed Forces Institute of Pathology," R. K. Harris, D.V.M.

Sept. 15, 1995: Washington, D.C., 1995 short course on Military Veterinary Medicine, "Necropsy Wet Lab," M. Martinez, D.V.M.

Oct. 1, 1995: Washington, D.C., American Veterinary Medical Association's Council on Government Affairs meeting, "The National Museum of Health and Medicine and Its Impending Move Back to the National Capital Mall: Opportunities for the Veterinary Profession," R. K. Harris, D.V.M.

Oct. 2, 1995: Chambersburg, Pennsylvania, Wilson College Veterinary Technician Program, "Animals in Research," G. D. Coleman, D.V.M.

Oct. 15, 1995: London, England, C. L. Davis European Symposium on Veterinary Pathology, "Pathology of the Ferret" and "Histopathologic Descriptive Techniques," B. H. Williams, D.V.M.

Nov. 12, 1995: New York, New York, Current Veterinary Therapy for the Domestic Ferret Course, "Infectious Diseases of Ferrets" and "Necropsy of the Ferret," B. H. Williams, D.V.M.

Nov. 14, 1995: Atlanta, Georgia, 46th Annual Meeting of the American College of Veterinary Pathologists, "The Internet and Pathology Education," B. H. Williams, D.V.M.

Nov. 15, 1995: Atlanta, Georgia, 46th Annual Meeting of the American College of Veterinary Pathologists, "Malignant Melanoma with Osteosarcomatous and Chondrosarcomatous Differentiation in the Digit of a Dog," J. T. Cobb, D.V.M.

Nov. 15, 1995: Atlanta, Georgia, 46th Annual Meeting of the American College of Veterinary Pathologists, "Pulmonary Metastasis of a Feline Postvaccinal Fibrosarcoma," C. M. Briscoe, D.V.M.

Nov. 16, 1995: Atlanta, Georgia, 46th Annual Meeting of the American College of Veterinary Pathologists, "Histopathology of Bottlenose Dolphins that Died During the 1987-88 United States Atlantic Coast Epizootic with Evidence for a Viral Etiology," F. Y. Schulman, D.V.M.

Nov. 16, 1995: Atlanta, Georgia, 46th Annual Meeting of the American College of Veterinary Pathologists, "Neuropathology Mystery Slide Seminar: Postvaccinal Canine Distemper Encephalitis," F. Y. Schulman, D.V.M.

Nov. 18, 1995: Schaumburg, Illinois, American Veterinary Medical Association's Council on Education meeting, "The National Museum of Health and Medicine and Its Impending Move Back to the National Capital Mall: Opportunities for the Veterinary Profession," R. K. Harris, D.V.M.

Nov. 18, 1995: Schaumburg, Illinois, American Veterinary Medical Foundation meeting, "The National Museum of Health and Medicine and Its Impending Move Back to the National Capital Mall: Opportunities for the Veterinary Profession," R. K. Harris, D.V.M.

Nov. 21, 1995: San Antonio, Texas, AMEDD Officer Basic Course, Veterinary Corps, "Postmortem Examination of the Military Working Dog," M. J. Martinez, D.V.M.

PUBLICATIONS

Journal Articles

1. Schulman FY, Farb A, Virmani R, Montali RJ. Fibrosing cardiomyopathy in captive lowland gorillas (*Gorilla gorilla gorilla*) in the United States: a retrospective study. *J Zoo Wildl Med.* 1995;26:43-51.

2. Colgin LMA, Nielsen RE, Tucker FS, Okerberg CV. Case report of listerial keratoconjunctivitis in hairless guinea pigs. *Lab Anim Sci.* 1995;45:435-436.
3. Rebar AH, Lipscomb TP, Harris RK, Ballachey BE. Clinical and clinical laboratory correlates in sea otters dying acutely in rehabilitation centers following the Exxon Valdez oil spill. *Vet Pathol.* 1995;32:346-350.
4. Krafft A, Lichy JH, Lipscomb TP, Klaunberg BA, Kennedy S, Taubenberger JK. Postmortem diagnosis of morbillivirus infection in bottlenose dolphins (*Tursiops truncatus*) in the Atlantic and Gulf of Mexico epizootics by a polymerase chain reaction-based assay. *J Wildl Dis.* 1995;31:410-415.
5. Stone KR, Rodkey WG, McKinney L, Steadman JR. Autogenous replacement of the meniscus cartilage: analysis of results and mechanisms of failure. *Journal of Arthroscopic and Related Surgery.* 1995;11:395-400.
6. St. Pierre P, Olson EJ, Elliott JJ, O'Hair KC, McKinney L, Ryan J. Tendon-healing to cortical bone compared with healing to a cancellous trough: a biomechanical and histologic evaluation in goats. *J Bone Joint Surg Am.* 1995;77:1858-1866.
7. Jacobson ER, Brown MB, Schumacher IM, Collins BR, Harris RK, Klein PA. Mycoplasmosis and the desert tortoise (*Gopherus agassizii*) in Las Vegas Valley, Nevada. *Chelonian Cons and Bio.* 1995;1:281-286.
8. Thurman JD, Moeller RB, Turturro A. Proliferative lesions of the testis in ad libitum-fed and food-restricted Fischer-344 and FBNF rats. *Lab Anim Sci.* 1995;45:635-640.

Books and Chapters

1. Williams BH, Johnson LK. Systemic lupus erythematosus in animals. In: Antonovych TT, ed. *Pathology of Systemic Lupus Erythematosus*. Washington, DC: Armed Forces Institute of Pathology, American Registry of Pathology; 1995:157-168.

Other Publications

1. Eastep JC. *AFIP Department of Veterinary Pathology 1993-1994 Wednesday Slide Conference* [CD-ROM]. Washington, DC: American Registry of Pathology, 1995.
2. Belote DA. *AFIP Department of Veterinary Pathology 1994-1995 Wednesday Slide Conference* [Syllabus and Study Set]; 1995.

Abstracts

1. Briscoe CM, Lipscomb TP, McKinney L. Pulmonary metastasis of a feline postvaccinal fibrosarcoma. *Vet Pathol.* 1995;32:564.
2. Cobb JT, Williams BH. Malignant melanoma with osteosarcomatous and chondrosarcomatous differentiation in the digit of a dog. *Vet Pathol.* 1995;32:564.
3. Schulman FY, Lipscomb TP, Kennedy S. Histopathology of bottlenose dolphins that died during 1987-88 United States Atlantic coast epizootic with evidence for a viral etiology. *Vet Pathol.* 1995;32:557.
4. St. Pierre P, Olson E, Elliott JJ, O'Hair KC, McKinney L, Ryan J. Tendon-healing to cortical bone compared with healing to a cancellous trough: a biomechanical and histological evaluation in goats. In: *Proceedings of the Annual Meeting of the American Academy of Orthopedic Surgeons*; February 18, 1995.
5. Johnson KR, Linden CL, Wilhelm GA, McKinney L, Hollinger JO, Popovic ND. A study of the biocompatibility and osteoconductive properties of a polycaprolactone foam in the tibia of the rat. In: *Proceedings of the Annual Meeting of the Society of Military Surgeons*; Vail, Colorado; December 11, 1995.



DIVISION OF LABORATORY ANIMAL MEDICINE

Albert H. McCullen, LTC, VC, USA
Chief
Date of Appointment - 8 July 1995

The Division of Laboratory Animal Medicine (DLAM) is responsible for maintaining the Institute's laboratory animal facility and for providing medical, surgical, and logistical support to investigators using laboratory animals in research protocols. DLAM maintains liaison with other DoD facilities in the region so that knowledge, manpower, and resources may be shared. Advice pertinent to laws, regulations, and proper use of animals is provided to the Director and to investigators. The division contributes in several ways to in-house and DoD-wide training efforts at all levels in the field of laboratory animal medicine.

STAFF

Medical

- (A) Albert H. McCullen, LTC, VC, USA, Chief,
- (A) Gaye R. Ruble, CPT, VC, USA, Assistant Chief

Scientific

- Johnny R. Epps, SGT, USA
- (D) DeAngelious C. Morrison, SGT, USA
- Malissa Storey, SPC, USA
- Tonya L. Hopkins, SPC, USA
- Theafers J. Kidd, Animal Caretaker Supervisor
- Donald A. Mayfield, Animal Caretaker
- Michael B. Cannon, Animal Caretaker
- James P. Pollock, Animal Caretaker
- Rahsaan O. Jackson, Animal Caretaker
- Jerome D. Escoe, Animal Caretaker

Administrative

- (A) John F. Milliner-Williams, SSG, USA, Administrative NCO

RESEARCH

The division provided support for 34 research protocols during the year. Division personnel served as coinvestigators on the following protocol: UBAM: "Investigation of Uncharacterized Intestinal Pathogen in Ferrets."

EDUCATION

The division developed, planned, and conducted a new continuing education course titled "Current Laboratory Animal Science Seminars." The new course, held in conjunction with the Pathology of Laboratory Animals course, lasted 2 days and was attended by 54 professionals, most of whom were laboratory animal veterinarians.

OTHER ACTIVITIES

LTC McCullen is a member of the AFIP Laboratory Animal Care and Use Committee and the Biosafety Committee. He is a diplomate of the American College of Laboratory Animal Medicine (ACLAM) and a member of the ACLAM Training Program Recognition Committee and the Ameri-

can College of Veterinary Preventive Medicine. He serves on the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee's Joint Technical Working Group. The group's responsibilities include generating an annual report to Congress on the use of animals in Department of Defense (DoD) research and the writing of directives and regulations covering animal care and use within the DoD. He also serves as the DoD's representative on the Inter-agency Research Animal Committee (IRAC). This committee serves as a forum for the exchange of information between federal agencies, speaking, when necessary, with a united voice on many of the pertinent policy issues and laws that impact the use of animals in biomedical research.

CPT Ruble is a member of the AFIP Laboratory Animal Care and Use Committee and is a diplomate of the American College of Veterinary Preventive Medicine.

GOALS

The Division of Laboratory Animal Medicine shall maintain the highest standards of laboratory animal care to the animals maintained within the Institute. The division will maintain AAALAC accreditation. To that end, the division will participate in the south wing renovation project, which will improve the air-handling system within the animal facilities. The division shall also institute a training program for those individuals desiring to become certified by the American Association of Laboratory Animal Science. The division will conduct the second annual course in laboratory animal science.

PRESENTATIONS

1. Nov. 28, 1995: Bethesda, Maryland, US Army Laboratory Animal Medicine Seminar Series, "Adjuvants," G. R. Ruble, D.V.M.
2. Dec. 12, 1995: Bethesda, Maryland, US Army Laboratory Animal Medicine Seminar Series, "Nonhuman Primates: Models and Research Applications," G. R. Ruble, D.V.M.

PUBLICATIONS

1. Ruble G, Berzins IK, Huso DL. Anorexia, wasting, and death in South African clawed frogs. *Lab Anim Sci.* 1995;45:592-594. Diagnostic exercise.
2. Ruble G, Wu C, Squire, RA, Gansow, OA, Strand, M. The use of ^{212}Pb -labeled monoclonal antibody in the treatment of murine erythroleukemia. *Int J Radiat Oncol Biol Phys.* 1995.

REGISTRY OF COMPARATIVE PATHOLOGY

Timothy P. O'Neill, D.V.M., Ph.D.
Chief Pathologist
Date of Appointment - 1 June 1995

MISSION

The Registry of Comparative Pathology (RCP) serves as a resource center for the study of pathologic processes from a comparative perspective. Its primary role is to heighten the awareness of and disseminate knowledge about animal models of human disease and comparative pathology, including diseases in both laboratory and wild free-living animals. It facilitates education and

research involving those animal diseases that may serve as models of human disease. The RCP produces several publications, sponsors scientific symposia, and hosts summer research students with the goals of disseminating information, encouraging exchange of ideas, and promoting further investigative efforts in the field of comparative pathology.

STAFF

Medical

- (D) Linda K. Johnson, D.V.M., M.S., M.P.H.
- (A) Timothy P. O'Neill, D.V.M., Ph.D.

Scientific

- (A) Amy Benavides, B.S., M.S., Research Assistant

Administrative

- (A) Valerie Gore, B.A., Administrative Assistant

RESEARCH

This year, three summer research assistants sponsored by the RCP collaborated on comparative studies with the Department of Cellular Pathology, AFIP, and with the Registry of Experimental Cancers, the National Cancer Institute, NIH, and the National Zoological Park (NZP). John Lewis from the University of Pennsylvania, College of Veterinary Medicine, worked with the Department of Cellular Pathology, AFIP, on confocal imaging of the developing rat glomerulus; Monika Jankowski from the College of Veterinary Medicine, Iowa State University, studied cytokine receptor expression in nitrosamine-induced tumors of rats at the National Cancer Institute, NIH; and Jennifer O'Connor from the Virginia-Maryland Regional College of Veterinary Medicine, working with pathologists at the NZP, characterized the respiratory pathogenesis of paramyxovirus infection in the brown snake of Guam.

EDUCATION

The prototype CD-ROM entitled "Electronic Animal Model Series" was produced by the RCP, featuring 20 animal models and two training directories. Over 1,000 complimentary disks were distributed to medical libraries, primarily in North America, along with installation information and a questionnaire. Preliminary results gathered from the questionnaires indicate wide acceptance of the CD-ROM media and an overwhelming desire to have all of the animal models featured in the *Handbook: Animal Models of Human Disease* available on CD-ROM format.

The Comparative Pathology Bulletin, published quarterly since 1969, continued throughout 1995. Approximately 1,000 individuals subscribe. Each eight-page issue of the bulletin includes descriptions of two animal models of human disease, a feature article on comparative pathology, and announcements of interest to comparative pathologists.

Directories produced and distributed by the RCP include: (1) "Educational Opportunities in Comparative Pathology, United States and Foreign Countries," was originally published in 1974 and has been revised every 2 years. The latest version lists 107 institutions (81 in the United States and 26 in foreign countries). Over 100 requests were received for the revised edition this year. (2) "Training Programs in Pathology and Clinical Pathology in North American Colleges and Schools of Veterinary Medicine 1993-1994," was cosponsored with the Association of Veterinary Pathology Chairpersons and Universities Associated for Research and Education in Pathology (UAREP). The directory features brief descriptions from 31 veterinary institutions. More than 200 of these directories were requested and distributed this year. We plan to revise and consolidate the directories "Educational Opportunities in Comparative Pathology" and "Veterinary Pathology and Veterinary Clinical Pathology Training Programs in North American Colleges and Schools of Veterinary Medicine 1993-1994" into one publication and add training programs in toxicologic pathology. (3) "Resources of Biomedical and Zoological Specimens," prepared in 1994, highlights

116 national and international resources for human and animal materials in a new, expanded format including an extensive index. More than 50 requests for this directory were honored in 1994.

The international journal, *Toxicologic Pathology*, published a special issue featuring expanded abstracts from the RCP's symposium, "Pathobiology of Transgenic and Other Mutant Induced Animals," held June 11, 1995. This symposium highlighted the background technical aspects of transgenic and knockout technology, naturally occurring and spontaneous lesions encountered, hepatitis B infection, hepatocarcinogenesis, and other tumor incidences in transgenic and knockout mice. Over 100 scientists from the U.S. and abroad attended the symposium. The 26th Annual Primate Pathology Workshop, organized by the registry and held in conjunction with the United States and Canadian Academy of Pathology meeting in Toronto, Canada, March 12, 1995, had 26 participants at the session; another 48 pathologists requested and received microslide study sets and case summaries.

The RCP hosted the 2nd Annual Zoo and Wildlife Pathology Workshop, held in conjunction with the joint American Association of Zoo Veterinarians and Wildlife Disease Association's annual meetings in East Lansing Michigan, attracting 35 participants this year. Another 20 pathologists who were unable to attend the meeting requested and received microslide sets and discussion summaries.

The "Diagnostic Exercise" series in each issue of *Laboratory Animal Science* since 1979 is supported and edited by the RCP. The purpose of this series is to call the attention of the biomedical community to diagnostic criteria for recognizing some common and significant diseases of economic importance in laboratory animals. Seven articles were published in 1995.

A booth exhibit entitled "The Veterinary Registries at the AFIP," featuring the "Registry of Comparative Pathology--A Research Resource," was displayed at the annual meetings of the Society of Toxicologic Pathologists, the American Veterinary Medical Association, and the American College of Veterinary Pathologists.

OTHER ACTIVITIES

Dr. O'Neill is a member of the DoD Consolidated Genetics Process Action Team, an associate editor of *Laboratory Animal Science*, a member of the ACVP Infectious Diseases Group Specialty Committee, and a review staff member of the Department of Veterinary Pathology, AFIP.

GOALS

Our goals are to continue to serve as a clearinghouse for inquiries from the biomedical community regarding comparative pathology and animal models of human disease; prepare and distribute the *Comparative Pathology Bulletin* and the *Handbook: Animal Models of Human Disease*; sponsor symposia and courses in comparative pathology; distribute the publication, "Scientific Response to Environmental Disasters: Resources for Disasters Impacting Animals"; sponsor medical or veterinary medical students as research assistants; and continue the publication and distribution of the directories and other articles of importance to the field of comparative pathology.

PRESENTATIONS

June 7, 1995: Washington, D.C., Descriptive Veterinary Pathology, AFIP, "Diagnostic Exercise and Case Description," T. P. O'Neill, D.V.M., Ph.D.

Aug. 10, 1995: Bethesda, Maryland, the 42nd Annual Pathology of Laboratory Animals Course, USUHS, "An Overview of Animal Models of Human Disease," T. P. O'Neill, D.V.M., Ph.D.

Nov. 17, 1995: Atlanta, Georgia, Annual Meeting of the American College of Veterinary Pathologists, "Pathogenesis of Bovine Immunodeficiency-like Virus in Cattle," T. P. O'Neill, D.V.M., Ph.D.

PUBLICATIONS

1. Johnson LK, ed. *Comparative Pathology Bulletin*. Washington, DC: Registry of Comparative Pathology; 1995.
2. Hyman JA, Johnson LK, Tsai MM, O'Leary TJ. Specificity of polymerase chain reaction identification of *Toxoplasma gondii* infection in paraffin-embedded animal tissues. *J Vet Diagn Invest*. 1995;7:275-278.
3. Pachner AR, Delanry E, O'Neill T, Major E. Inoculation of nonhuman primates with the N40 strain of *Borrelia burgdorferi* leads to a model of Lyme neuroborreliosis faithful to the human disease. *Neurology*. 1995;45:165-172.
4. Pachner AR, O'Neill T, Frey A, Davidson E. Vaccination is effective in protecting against Lyme neuroborreliosis in the nonhuman primate model. *Ann Neurol*. 1995;38:283.

In addition, two articles have been submitted for publication.

Animal Models Published in 1995:

1. Tomohiro M, Maruyama Y, Murata S, Mizuno A. Hereditary cataract in the UPL rat. *Comparative Pathology Bulletin*. 1995;27:3,5.
2. Enomoto K, Mori M. Wilson's disease and hepatocellular carcinoma. *Comparative Pathology Bulletin*. 1995;27:4,5.
3. Gijbels MJJ, Bruijnzeel PLB, Toonstra J, Elliott GR, Zurcher C, Hogensch H. Chronic proliferative dermatitis. *Comparative Pathology Bulletin*. 1995;27:2,3.
4. Moody K, Barthold S. Lyme borreliosis in laboratory mice. *Comparative Pathology Bulletin*. 1995;27:4,5.
5. Usherwood EJ, Nash A. Lymphoproliferative disease induced by murine herpesvirus-68. *Comparative Pathology Bulletin*. 1995;27:3,6.
6. Walker DH. Endothelial-target rickettsial infection. *Comparative Pathology Bulletin*. 1995;27:4,5,6.
7. Martorana PA. Genetic deficiency in α_1 proteinase inhibitor (α_1 PI) associated with emphysema. *Comparative Pathology Bulletin*. 1995;27:3,5.
8. Sundberg JP. Mucosotropic papillomavirus infections. *Comparative Pathology Bulletin*. 1995;27:4,5.
9. Takahashi K, Yi S, Arak S, Yamamura K. Transgenic mouse model of familial amyloidotic polyneuropathy (FAP) type I. *Lab Anim Sci*. 1995;45:173-175.

Diagnostic Exercises Published in 1995

1. Cover C. Mortality in rainbow trout. *Lab Anim Sci*. 1995;45:98-100.
2. Wright J. Dyspnea and acute death in a beagle. *Lab Anim Sci*. 1995;45:216-218.
3. Lipman N, Hurley R. Depression, anorexia in recently shipped guinea pigs. *Lab Anim Sci*. 1995;45:305-308.
4. Rozengurt N. Ataxia and incoordination in ferrets. *Lab Anim Sci*. 1995;45:432-434.

In addition, two articles are in press.